Group Code	COURSE
EE	ELECTRICAL AND ELECTRONICS

MAXIMUM MARKS	TOTAL DURATION	MAXIMUM TIME FOR ANSWERING
180	200 Minutes	180 Minutes

MENTION YOUR DIPLOMA CET NUMBER	BOOKLET VERSION CODE	SERIAL NUMBER
	A1	223785

EE A1

DOs:

1. This question booklet is issued to you by the invigilator after the 2nd bell i.e., after 9.50 am.
2. Check whether the DCET Number has been entered and shaded in the respective circles on the OMR answer sheet.
3. The version code and serial number of this question booklet should be entered on the OMR answer sheet and the respective circles should also be shaded completely.
4. The Version Code and Serial Number of this question booklet should be entered on the Nominal Roll without any mistakes.
5. Compulsorily sign at the bottom portion of the OMR answer sheet in the space provided.

DON'Ts:

1. **THE TIMING AND MARKS PRINTED ON THE OMR ANSWER SHEET SHOULD NOT BE DAMAGED / MUTILATED / SPOILED.**
2. **The 3rd bell rings at 10.00 am, till then;**
   - Do not remove the seal present on the right hand side of this question booklet.
   - Do not look inside this question booklet or start answering on the OMR answer sheet.

IMPORTANT INSTRUCTIONS TO CANDIDATES

1. In case of usage of signs and symbols in the questions, the regular textbook connotation should be considered unless stated otherwise.
2. This question booklet contains 180 (items) questions and each question will have one statement and four different options / responses & out of which you have to choose one correct answer.
3. After the 3rd Bell is rung at 10.00 am, remove the paper seal on the right hand side of this question booklet and check that this booklet does not have any unprinted or torn or missing pages or items etc., if so, get it replaced by a complete test booklet. Read each item and start answering on the OMR answer sheet.
4. Completely **darken / shade** the relevant circle with a **blue or black ink ballpoint pen against the question number on the OMR answer sheet.**

ಸರಿಯಾದ ಕ್ರಮ CORRECT METHOD	ತಪ್ಪು ಕ್ರಮಗಳು WRONG METHOD
(A) ● (C) (D)	⊗ (B) (C) (D) ◐ (B) (C) (D) (A) (B) (C) ⊘ (A) ● ● (D) (A) ● (C) (D)

5. Please note that even a minute unintended ink dot on the OMR answer sheet will also be recognized and recorded by the scanner. Therefore, avoid multiple markings of any kind on the OMR answer sheet.
6. Use the space provided on each page of the question booklet for Rough Work. Do not use the OMR answer sheet for the same.
7. **Last bell will ring at 1.00 pm,** stop marking on the OMR answer sheet.
8. Hand over the **OMR answer sheet** to the room invigilator as it is.
9. After separating the top sheet (Office copy), the invigilator will return the bottom sheet replica (candidate's copy) to you to carry home for self-evaluation.

PART - A

APPLIED SCIENCE

1. Which of the following is the supplementary unit of SI System?

   (A) Candela (B) Kelvin

   (C) Radian (D) Mole

2. The main scale of Slide Calipers is divided into millimeter, the length of Vernier is 19 mm and is divided into 20 equal parts. The least count is

   (A) 0.01 cm (B) 0.001 cm

   (C) 0.05 cm (D) 0.005 cm

3. Which one of the following is not a vector quantity?

   (A) Velocity (B) Acceleration

   (C) Speed (D) Force

4. The magnitude of resultant of two forces $\vec{P}$ and $\vec{Q}$ acting in the same line and in opposite direction is

   (A) $P + Q$ (B) $P - Q$

   (C) $\frac{P}{Q}$ (D) $\frac{Q}{P}$

5. Two forces 3N and 5N are acting at a point making an angle of 60°. The magnitude of the resultant is

   (A) 15 N (B) 2 N

   (C) 7 N (D) 8 N

6. Torque produces

   (A) rotational motion (B) linear motion

   (C) both rotational and linear motion (D) neither rotational nor linear motion

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Space For Rough Work

7. Which one of the following is not related to couple?

(A) Kicking of football
(B) Opening and closing of tap
(C) Rotation of steering wheel
(D) Pedalling of bicycle

8. Within elastic limit, stress is

(A) independent of strain
(B) zero
(C) directly proportional to strain
(D) inversely proportional to strain

9. The length of a wire increases by 1% on suspending a load of 2 N from it. The tensile strain in the wire is

(A) 0.01
(B) 0.5
(C) 2
(D) 1

10. Pressure at any point inside a liquid

(A) remains zero
(B) increases with depth
(C) decreases with depth
(D) independent of depth

11. The pressure at the bottom of a swimming pool 20m wide and the water 2m deep (given density of water 1000 Kg/m^3 and $g = 10\ m/s^2$) is

(A) 2×10^3 Pa
(B) 40×10^3 Pa
(C) 10×10^3 Pa
(D) 20×10^3 Pa

12. In the case of liquids, as the temperature increases, the surface tension generally

(A) remains constant
(B) decreases
(C) increases
(D) zero

Space For Rough Work

13. The property of a liquid to oppose the relative motion between different layers is called

(A) density (B) elasticity

(C) viscosity (D) capillarity

14. An expression for coefficient of viscosity is (if F = viscous force; A = Area, V = difference in Velocity, x = distance between two layers)

(A) $\eta = -\frac{FA}{xV}$ (B) $\eta = -\frac{FV}{Ax}$

(C) $\eta = -\frac{Fx}{AV}$ (D) $\eta = -\frac{FxA}{V}$

15. The expression that represents Charle's law is

(A) PV = constant (B) VT = constant

(C) $\frac{P}{V}$ = constant (D) $\frac{V}{T}$ = constant

16. The pressure of a gas at 27°C is one atmospheric pressure. Keeping the volume constant, if the temperature is raised to 60°C, then its pressure will be

(A) 1.11 atmospheric pressure (B) 1.5 atmospheric pressure

(C) 2.2 atmospheric pressure (D) 2 atmospheric pressure

17. Hot water at 80°C will exchange heat with surroundings maintained at 25°C till the temperature of water becomes

(A) 80°C (B) 50°C

(C) 55°C (D) 25°C

18. Radiator in automobiles works on the principle of

(A) Conduction (B) Convection

(C) Radiation (D) Evaporation

Space For Rough Work

19. In the expression $C_p - C_v = R$, notation R represents

(A) Resultant force (B) Planck's constant

(C) Universal gas constant (D) Resonance

20. Physical quantity that represents the energy of the mechanical wave is

(A) Wave length (B) Frequency

(C) Amplitude (D) Wave period

21. Which one of the following is not an example of simple harmonic motion?

(A) Swinging of cradle (B) Oscillations of simple pendulum

(C) Vibrations of tuning fork (D) Motion of hands of clock

22. In the equation for velocity of sound in air, which of the following options does not hold good according to Laplace?

(A) Poor conductivity of air (B) Rapid pressure changes

(C) Maintaining constant temperature (D) Rise and fall of temperature

23. Distance between two consecutive nodes in a stationary wave is equal to

(A) Wavelength of individual wave (B) Difference of wavelengths of two waves

(C) Sum of wavelengths of two waves (D) Half of wavelength of individual wave

24. When the tension on the sonometer wire is increased by 15 N, its frequency is doubled. The original tension is

(A) Zero (B) 5 N

(C) 10 N (D) 15 N

Space For Rough Work

25. Two identical waves superpose on one another, then the beat frequency is

(A) Zero (B) One

(C) Ten (D) Infinity

26. Damage to the suspension bridge by marching military troops is due to

(A) Reverberation (B) Resonance

(C) Beats (D) Noise

27. A tuning fork produces waves in a medium. The parameter that changes with temperature of the medium is

(A) Wavelength (B) Frequency

(C) Amplitude (D) Period

28. The electromagnetic radiation used to detect the artificial gems from the original gems is

(A) Microwave (B) Radio wave

(C) Ultraviolet ray (UV ray) (D) X-ray

29. During excitation of an atom from ground state to excited state, the number of photons absorbed by the single atom is

(A) 2 (B) 1

(C) 3 (D) 0

30. In Nano-technology, the manipulation of atom is done in the range of

(A) 1 nano meter – 100 nano meter (B) 1 micro meter – 100 micro meter

(C) 1 pico meter – 100 pico meter (D) 1 millimeter – 100 millimeter

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Space For Rough Work

31. Live telecast of a programme can be viewed by

(A) Manual communication
(B) X-ray communication
(C) Landline communication
(D) Satellite communication

32. Optical Fibre is used in

(A) Endoscopy
(B) Biometric Machine
(C) Simple Microscope
(D) Simple Telescope

33. Acetic acid is an example for

(A) Strong Electrolyte
(B) Neutral Solution
(C) Weak Electrolyte
(D) Non-Electrolyte

34. The process of coating tin over iron and steel is known as

(A) Alloying
(B) Galvanizing
(C) Tinning
(D) Refining

35. The batteries which are recharged and reused are called

(A) Primary Battery
(B) Secondary Battery
(C) Fuel Cell
(D) Alkaline Battery

Space For Rough Work

36. PAFC is a type of

(A) Primary Cell (B) Secondary Cell

(C) Solar Cell (D) Fuel Cell

37. The easily fusible material which is formed when Flux reacts with gangue is

(A) Slag (B) Alloy

(C) Polymer (D) Mineral

38. Which of the below given polymers is obtained by condensation polymerization?

(A) Poly ethene (B) Nylon

(C) PVC (D) Poly propane

39. Which of the following is not a composite material?

(A) Fibreglass (B) Concrete

(C) Ceramic (D) Bronze

40. The pH value of Lemon juice is about

(A) 2.4 (B) 8.2

(C) 10.2 (D) 14

Space For Rough Work

PART – B

ENGINEERING MATHEMATICS

41. The value of $\begin{vmatrix} \cos 50^\circ & \sin 10^\circ \\ \sin 50^\circ & \cos 10^\circ \end{vmatrix}$ is

(A) $\frac{1}{\sqrt{2}}$ (B) $\frac{\sqrt{3}}{2}$

(C) $\frac{-1}{2}$ (D) $\frac{1}{2}$

42. The values of x & y from the simultaneous equations $3x + 4y = 7$ and $7x - y = 6$ are.

(A) $x = 1, y = 1$ (B) $x = -1, y = -1$

(C) $x = 1, y = -1$ (D) $x = -1, y = 1$

43. If $\begin{vmatrix} x & 3 \\ 3 & x \end{vmatrix} = 0$ then the value of x is

(A) ± 1 (B) ± 3

(C) ± 9 (D) $\pm \sqrt{6}$

44. If $A = \begin{bmatrix} -1 & 3 \\ 4 & -5 \end{bmatrix}$, then $2A^T$ is

(A) $\begin{bmatrix} -2 & 6 \\ 8 & -10 \end{bmatrix}$ (B) $\begin{bmatrix} -1 & 4 \\ 3 & -5 \end{bmatrix}$

(C) $\begin{bmatrix} -2 & 8 \\ 6 & 8 \end{bmatrix}$ (D) $\begin{bmatrix} -2 & 8 \\ 6 & -10 \end{bmatrix}$

Space For Rough Work

45. If A is a given square Matrix then

(A) $\text{adj } A = \frac{A^{-1}}{|A|}$ (B) $\text{adj } A = \frac{|A|}{|A^{-1}|}$

(C) $\text{adj } A = |A| . A^{-1}$ (D) $AA^{-1} = \text{adj } A . |A|$

46. The characteristic Equation of the Matrix $A = \begin{bmatrix} -5 & 6 \\ -2 & 1 \end{bmatrix}$ is

(A) $\lambda^2 - 6\lambda + 12 = 0$ (B) $\lambda^2 - 4\lambda + 17 = 0$

(C) $\lambda^2 + 4\lambda + 7 = 0$ (D) $\lambda^2 - 4\lambda + 7 = 0$

47. The unit vector in the direction of $\vec{a} = 3i + 4j - 2k$ is

(A) $\hat{a} = \frac{3i + 4j - 2k}{\sqrt{26}}$ (B) $\hat{a} = \frac{3i + 4j - 2k}{\sqrt{29}}$

(C) $\hat{a} = i + j - 2k$ (D) $\hat{a} = \frac{3i + 4j - 2K}{\sqrt{21}}$

48. If $\vec{a} = i + \lambda j$ and $\vec{b} = 2j + 3k$ and $\vec{a} . \vec{b} = 0$ then 'λ' is Equal to

(A) $\frac{-2}{3}$ (B) $\frac{2}{3}$

(C) $\frac{3}{2}$ (D) 0

49. Area of the triangle whose adjacent sides are $\vec{a} = 2i - j + 2k$ and $\vec{b} = 3i - j$ is

(A) $\sqrt{41}$ sq.units (B) $\frac{\sqrt{41}}{2}$ sq.units

(C) $\frac{3}{2}$ sq. units (D) $\frac{\sqrt{65}}{2}$ sq.units

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Space For Rough Work

50. The number of possible outcomes in the sample space when two dice of different colours are rolled is

(A) 36 (B) 6

(C) 9 (D) 12

51. Sin θ is positive and tan θ is negative when θ is in

(A) I quadrant (B) II quadrant

(C) III quadrant (D) IV quadrant

52. The value of

$$\frac{\tan(\pi - \alpha)}{\tan(-\alpha)} + \frac{\cos(\pi/2 - \alpha)}{\sin(2\pi - \alpha)} + \frac{\operatorname{cosec}\left(\frac{3\pi}{2} + \alpha\right)}{\sec(\pi + \alpha)}$$ is

(A) – 1 (B) 2

(C) – 2 (D) 1

53. The value of sin (105°) is

(A) $\frac{\sqrt{3}+1}{2\sqrt{2}}$ (B) $\frac{\sqrt{3}-1}{2\sqrt{2}}$

(C) $\frac{1-\sqrt{3}}{2\sqrt{2}}$ (D) $\frac{\sqrt{3}}{2\sqrt{2}}$

54. The value of $\frac{1 - \cos A + \sin A}{1 + \cos A + \sin A}$ is

(A) tan A (B) tan $(A/2)$

(C) cot $(A/2)$ (D) cot A

55. If $\sin A = \frac{1}{3}$, then the value of sin 3A is

(A) $-3/27$ (B) 1

(C) $\frac{-4}{27}$ (D) $\frac{23}{27}$

Space For Rough Work

56. The value of 2 cos 3A. sin 2A is

(A) sin 5A + sin A

(B) cos 5A + cos A

(C) sin 5A – sin A

(D) cos 5A – cos A

57. The polar form of 1 + i is

(A) $\sqrt{2}\left[\cos\frac{\pi}{4} + i\sin\frac{\pi}{4}\right]$

(B) $\sqrt{2}\left[\cos\frac{\pi}{4} - i\sin\frac{\pi}{4}\right]$

(C) $\sqrt{2}\left[\sin\pi/4 + i\cos\frac{\pi}{4}\right]$

(D) $\sqrt{2}\left[-\cos\frac{\pi}{4} - i\sin\frac{\pi}{4}\right]$

58. $\lim_{x \to -3} \frac{x^2 - 5x + 6}{x^2 - 3x} =$

(A) $\frac{-5}{3}$

(B) $\frac{1}{3}$

(C) $\frac{-1}{3}$

(D) $\frac{5}{3}$

59. $\lim_{x \to a} \frac{\sqrt{x^3} - \sqrt{a^3}}{x - a} =$

(A) $\frac{3}{2}\sqrt{a}$

(B) $\frac{3}{2\sqrt{a}}$

(C) $\sqrt{a}$

(D) $\frac{1}{\sqrt{a}}$

60. $\lim_{\theta \to 0} \frac{\cos 3\theta - \cos\theta}{\theta \sin 2\theta} =$

(A) tan 2θ

(B) 2

(C) –2

(D) 1

Space For Rough Work

61. Equation of the straight line passing through the point (1, 3) and having slope – 2 is

(A) $2x - y + 5 = 0$ (B) $x + 2y + 5 = 0$

(C) $x - 2y - 5 = 0$ (D) $2x + y - 5 = 0$

62. Equation of the straight line passing through the origin and perpendicular to the line $5x - 4y - 1 = 0$ is

(A) $5x - 4y = 0$ (B) $4x + 5y = 0$

(C) $5x - 4y + 1 = 0$ (D) $4x + 5y + 1 = 0$

63. If $y = \frac{x^2 - 5}{x^2 + 3}$, then $\frac{dy}{dx} =$

(A) $\frac{4x^3 - 4x}{(x^2 + 3)^2}$ (B) $\frac{16x}{(x^2 + 3)^2}$

(C) $\frac{4x}{(x^2 + 3)^2}$ (D) $\frac{-16x}{(x^2 + 3)^2}$

64. If $y = \sin^{-1}(\cos x)$, then $\frac{dy}{dx} =$

(A) $\frac{1}{\sqrt{1 - x^2}}$ (B) $\frac{-\sin x}{\sqrt{1 - x^2}}$

(C) 1 (D) – 1

65. If $y = \sqrt{y \log x}$, then $\frac{dy}{dx} =$

(A) $\frac{1}{x(2y - 1)}$ (B) $\frac{1}{x}$

(C) $\frac{1}{x(1 - 2y)}$ (D) $\frac{1}{xy}$

Space For Rough Work

66. If $x = a\cos^2\theta$ and $y = b\sin^3\theta$, then $\frac{dy}{dx}$ =

(A) $-\frac{3b}{2a}\sin\theta$ (B) $-\frac{3b}{2a}$

(C) $\frac{2a}{b}\cos\theta$ (D) $\frac{-2a}{3b\sin\theta}$

67. If $y = x^y$, then $\frac{dy}{dx}$

(A) $\frac{y^2}{x(1-\log x)}$ (B) $\frac{y^2}{x(1+\log y)}$

(C) $\frac{y^2}{x\ (1\ -\ y\ \log x)}$ (D) $\frac{y^2}{x(1+\log x)}$

68. If $y = \sin^2 x$, then $\frac{d^2y}{dx^2}$ =

(A) 2 cos 2x (B) 2 sin 2x

(C) 2 sin x cos x (D) 2x sin x

69. The Equation of tangent to the curve y = sin x at the point $(\pi, 0)$ is

(A) $x + y + 1 = 0$ (B) $x - y - 1 = 0$

(C) $x + y - \pi = 0$. (D) $x - y + \pi = 0$.

70. The rate of change of radius of the sphere is 9cm/s. Then the rate of change of volume of the sphere when the radius is 2 cm is equal to

(A) 144π cm^3/s (B) 9π cm^3/s

(C) 56π cm^3/s (D) 64π cm^3/s

Space For Rough Work

71. $\int \frac{1}{1+\cos x}\,dx =$

(A) $\tan x + \sec x + c$ (B) $\tan x - \sec x + c$

(C) $-\cot x + \operatorname{cosec} x + c$ (D) $\cot x - \operatorname{cosec} x + c$

72. $\int \left(\sqrt{x} + \cot x\right) dx =$

(A) $\frac{2}{3} x^{3/2} + \log \sin x + c$ (B) $\frac{3}{2} x^{2/3} + \log \sec c\, x + c$

(C) $\frac{2}{3} x^{3/2} - \log \sin x + c$ (D) $\frac{3}{2} x^{2/3} - \log \sec x + c$

73. $\int \frac{e^{\log x}}{x}\,dx =$

(A) $e^x + c$ (B) $\log (e^x) + c$

(C) $x \log e^x + c$ (D) $e^{\log x} + c$

74. $\int \log x . dx =$

(A) $x \log x + x + c$ (B) $x \log x - x + c$

(C) $x + \log x + c$ (D) $x - \log x + c$

75. $\int \frac{x}{\sqrt{1+x^2}}\,dx =$

(A) $\sqrt{1+x^2} + c$ (B) $\sqrt{1-x^2} + c$

(C) $\frac{1}{\sqrt{1+x^2}} + c$ (D) $\frac{1}{\sqrt{1-x^2}} + c$

Space For Rough Work

76. $\int_{-2}^{1} (x + 1)(x - 1)\, dx =$

(A) 0 (B) 1

(C) – 1 (D) – 2

77. The area bounded by the curve $y = \sin^2 x$, the x–axis and the ordinates $x = 0$ and $x = \pi/2$ is

(A) $\frac{\pi}{4}$ sq. units (B) $\frac{\pi}{2}$ sq. units

(C) $\frac{\pi}{3}$ sq. units (D) $\frac{\pi}{6}$ sq. units

78. The order and degree of a differential equation $4\left(\frac{dy}{dx}\right)^3 + 8xy + \left(\frac{d^2y}{dx^2}\right)^2 - 7 = 0$ respectively are

(A) 1 and 3 (B) 2 and 2

(C) 2 and 3 (D) 2 and 1

79. The differential equation formed from the equation $y^2 = 4ax$ by eliminating arbitrary constant is

(A) $2x\frac{dy}{dx} - y = 0$ (B) $2x\frac{dy}{dx} + y = 0$

(C) $y\frac{dy}{dx} - 2x = 0$ (D) $y\frac{dy}{dx} + 2x = 0$

80. For the differential equation $\frac{dy}{dx} + (\tan x).\, y = \cos x$, the integrating factor is

(A) log x (B) cot x

(C) cosec x (D) sec x

Space For Rough Work

PART – C

ELECTRICAL & ELECTRONICS ENGINEERING

81. The Resistivity of Conductor

(A) Increases with increase in length

(B) Decreases with increase in length

(C) Decreases with increase in Area

(D) Do not change

82. Which of the following is not a Conventional Source of Electrical Energy?

(A) Coal

(B) Nuclear Energy

(C) Tidal Energy

(D) Hydel Power

83. If Relative Permittivity $\in_r$ of Mica is 15, then its Absolute Permittivity is _____ F/m

(A) $15 \in_0$

(B) $\frac{15}{\in_0}$

(C) $\frac{\in_0}{15}$

(D) 8.854×10^{-12}

84. The force exerted between two-point charges is given by _____

(A) $\frac{Q_1 Q_2}{4\pi d^2}$

(B) $\frac{Q_1 Q_2 d^2}{4\pi \in}$

(C) $\frac{Q_1 Q_2}{4\pi \in d^2}$

(D) $\frac{Q_1 Q_2 \in}{4\pi d^2}$

85. One unit of Electrical Energy equals to _____

(A) 100 WH

(B) 1000 WH

(C) 5000 WH

(D) 10,000 WH

Space For Rough Work

86. The magnetizing force can be calculated by using

(A) mmf x length

(B) $\frac{\text{Length}}{\text{mmf}}$

(C) $\frac{\text{Length x Area}}{\text{mmf}}$

(D) $\frac{\text{mmf}}{\text{Length}}$

87. The emf induced in a coil having 100 turns, when flux linking with the coil changes from 0.5 wb to 0.1 wb in 0.2 sec is _____

(A) 200 V

(B) 100 V

(C) 50 V

(D) 150 V

88. A circuit whose characteristics are same irrespective of direction of current or voltage is called _____

(A) Bilateral

(B) Unilateral

(C) Linear

(D) Non-linear

89. Unit of magnetic flux is _____

(A) Weber

(B) Ampere-turn

(C) Tesla

(D) Coulomb

90. A coil of 150 turns is linked with a flux of 0.01 wb when carrying a current of 10A. Calculate the inductance of the coil.

(A) 0.15 H

(B) 1.5 H

(C) 0.6 mH

(D) 150 KH

91. Form factor for sinusoidal alternating current is given by _____

(A) $\frac{\text{RMS Value}}{\text{Average Value}}$

(B) $\frac{\text{Average Value}}{\text{RMS Value}}$

(C) $\frac{\text{Maximum Value}}{\text{RMS Value}}$

(D) $\frac{\text{RMS Value}}{\text{Maximum Value}}$

Space For Rough Work

92. The operator j has value of _____

(A) +1 (B) – 1

(C) $\sqrt{-1}$ (D) $\sqrt{+1}$

93. The Power factor of R-C Circuit is

(A) Always Zero (B) Between 0 and 1

(C) Always Unity (D) Between 0 and –1

94. A balanced 3–ϕ 3 wire system with Y Connected, load is supplied with 400V and impedance of each phase is (6+j8) Ω, The Power factor is _____

(A) 0.8 (B) 0.6

(C) 0.7 (D) 0.9

95. Dynamometer principle is not used in case of measuring Voltages, because it is _____

(A) Not possible (B) Not efficient

(C) Costly (D) Highly defective

96. Which of the following Instruments is free from hysteresis losses?

(A) Electrostatic (B) Dynamometer

(C) Moving coil (D) Moving Iron

97. A Resistance thermometer is basically a _____

(A) Potentiometer (B) Active transducer

(C) Passive transducer (D) Self-generating transducer

Space For Rough Work

98. The unknown Inductance can be measured by _____

(A) Wheatstone bridge (B) Schering bridge

(C) Kelvin's Double bridge (D) Maxwell's bridge

99. In a Reed type frequency meters, all the Reeds

(A) Have the same natural frequencies

(B) Have the different natural frequencies

(C) Have different natural frequencies but the difference in natural frequencies of Adjacent reeds is $\pm$ 0.5 Hz.

(D) Have different natural frequencies but the difference in natural frequencies of Adjacent reeds is $\pm$ 50 Hz.

100. In a Meggar the controlling torque is provided by _____

(A) Weights attached to the moving system (B) Springs

(C) Braking magnet (D) Pointer

101. The nature of current flowing in the armature of a DC machine is _____

(A) Constant DC (B) AC

(C) Both AC & DC (D) Variable DC

102. Critical resistance of a DC generator is the resistance of

(A) load (B) armature

(C) field (D) brushes

103. Number of parallel paths in wave winding is _____

(A) 16 (B) 4

(C) 2 (D) 8

Space For Rough Work

104. The slight curvature of the lower end of OCC of self excited DC generator is due to

(A) magnetic inertia (B) high speed

(C) high field resistance (D) high armature resistance

105. When load is removed _____ motor will run at highest speed.

(A) Differential compound (B) Series

(C) Cumulative compound (D) Shunt

106. An Ideal DC generator has a regulation of _____

(A) 10% (B) 25%

(C) Zero% (D) 100%

107. The Power factor of an alternator is controlled by its _____

(A) Speed (B) excitation

(C) load (D) prime mover

108. Magnitude of induced e.m.f. in an alternater | phase is _____

(A) $E_{rms} = 4.44\ K_p\ K_b\ f\phi T$ (B) $E_{rms} = 4.44\ f\phi T$

(C) $E_{rms} = 1.11\ f\phi T$ (D) $E_{rms} = 8.88\ K_p\ K_b\ f\phi T$

109. In an alternater armature reaction will be distortional in case of _____ load power factor

(A) Zero leading (B) Zero lagging

(C) Unity (D) 0.866

Space For Rough Work

110. In an alternator, if the winding pitch is shortpitched by 60^{o} electrical, its pitch factor will be _____

(A) 0.75 (B) 1

(C) 0.28 (D) 0.866

111. The two windings of a transformer are _____

(A) Electrically linked (B) Magnetically linked

(C) Physically linked (D) Not linked at all

112. Eddy current loss in a transformer is proportional to

(A) $B_{max}^{2} . f^{2}$ (B) $B_{max} . f$

(C) $B_{max} . f^{2}$ (D) $B_{max}^{1.6} . f^{2}$

113. Copper loss of a 2 winding transformer is found by

(A) Short circuiting HV side (B) Open circuiting LV side

(C) Short circuiting LV side (D) Open circuiting HV side

114. The transformer oil should have _____ Viscosity and _____ resistivity

(A) high, high (B) high, low

(C) low, low (D) low, high

115. The voltage transformation ratio (K) of stepdown transformer is _____

(A) $K > 1$ (B) $K < 1$

(C) $K = 0$ (D) $K = 1$

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116. The frame of an IM is madeup of _____

(A) Cast iron (B) Aluminium

(C) Bronze (D) Silicon

117. A 3ϕ 440V, 50Hz induction motor has 3% slip. The rotor frequency will be _____

(A) 50Hz (B) 25Hz

(C) 1.5Hz (D) 15Hz

118. Overexcited synchronous motor provides _____ power factor

(A) Unity (B) lagging

(C) Zero (D) Leading

119. The star-delta starter is equivalent to an auto transformer of ratio_____

(A) 57.7% (B) 33.3%

(C) 66.7% (D) 50%

120. The two peculiar effects of linear IM are _____

(A) Thomson effect and Peltier effect

(B) Transverse edge effect and end effect

(C) Thomson effect and Transverse edge effect

(D) Peltier effect and end effect.

121. Gas turbine power plants are not widely used

(A) As peak load plants (B) As standby power plants

(C) As Base load plants (D) In combination with steam power plant

122. The pipe connected between the surge tank and prime mover is _____

(A) Spill way (B) Tail Race

(C) Penstock (D) Draft tube

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123. In thermal power plant _____enters super heater of the Boiler

(A) Hot water (B) Wet steam

(C) Super heated steam (D) Cold water

124. In Nuclear power plant the speed of Neutrons is reduced by_____

(A) Moderator (B) Control rods

(C) Coolant (D) Condenser

125. A Solar Panel is a packaged interconnected Assembly of _____

(A) Photon cells (B) Fuel cells

(C) Photo voltaic cells (D) Load cells

126. Base Load plants are _____

(A) Highly Efficient (B) Moderately Efficient

(C) Low Efficient (D) Very Low Efficient

127. Area under the daily load curve divided by 24 hours gives _____

(A) Load per day (B) Average load

(C) Total load (D) Maximum load

128. Out of these voltages _____ is used for the generation of AC power.

(A) 110 KV (B) 66 KV

(C) 11 KV (D) 220 KV

129. The unit of Luminous Intensity is

(A) Lumens/steradian (B) Lumen-steradian

(C) LUX (D) Lumens/m^2

130. The length of transmission line is 150 Kms. Then it is a _____

(A) Short transmission line (B) Medium transmission line

(C) Long transmission line (D) Extra long transmission line

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131. The minimum voltage at which the corona occurs is _____

(A) Visual Breakdown voltage
(B) Disruptive corona voltage
(C) Visual critical voltage
(D) Disruptive critical voltage

132. The skin effect is increased when

(A) The frequency of supply increases
(B) The frequency of supply decreases
(C) The supply voltage increases
(D) The supply voltage decreases

133. The Homopolar HVDC link consists of

(A) Only one conductor with positive polarity
(B) Only one conductor with negative polarity
(C) Two or more conductors with same polarity
(D) Two conductors with opposite polarity

134. Dielectric Heating is used in

(A) Surface Hardening of metals
(B) Melting of metals
(C) Annealing of metals
(D) Preheating of plastics

135. In a circuit breaker, if the dielectric strength of the medium between contacts builds up more rapidly than the restriking voltage, then arc will be

(A) Extinguished
(B) Produced
(C) Enhanced
(D) Decreased

136. An over current Relay having a current setting of 110% is connected to supply circuit through a current transformer of ratio 400/5. The pick up value will be

(A) 10A
(B) 5.1A
(C) 5.5A
(D) 6A

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137. The MCB works on the principle of

(A) Electromagnet Release
(B) Magneto-Thermic Release
(C) Thermal Release
(D) ionic Release

138. To limit the short circuit current at various points in the power system _____ are used

(A) Relays
(B) Transformers
(C) Capacitors
(D) Reactors

139. Phase to Ground fault is common in

(A) Motors
(B) Transformers
(C) Overhead lines
(D) Bus Bars

140. Which portion of the power system is least prone to faults?

(A) Alternators
(B) Transformers
(C) Switch Gear
(D) Overhead lines

141. A Semi conductor has _____ temperature co-efficient

(A) Positive
(B) Zero
(C) Negative
(D) Constant

142. A hole in a semi conductor is defined as _____

(A) a free electron
(B) the incomplete part of an electron pair bond
(C) A free proton
(D) A free neutron

143. A crystal diode is a _____ device

(A) non-linear
(B) bilateral
(C) linear
(D) non-conductive

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144. An LED

(A) emits light when reverse biased
(B) senses light when reverse biased
(C) emits light when forward biased
(D) acts as a variable resistor

145. In an integrator, the feed back element is a _____

(A) Resistor
(B) Capacitor
(C) Zener diode
(D) Semiconductor diode

146. In a transister, signal is transferred from a _____ circuit

(A) high resistance to low resistance
(B) low resistance to high resistance
(C) high resistance to high resistance
(D) low resistance to low resistance

147. The frequency of oscillation of Colpitts oscillator is given by _____

(A) $fr = \frac{1}{2\Pi\sqrt{LC_T}}$
(B) $fr = \frac{1}{2\Pi LC_T}$
(C) $fr = \frac{1}{2\Pi}\sqrt{\frac{L}{C_T}}$
(D) $fr = \frac{1}{2\Pi}\sqrt{\frac{C_T}{L}}$

148. Decimal 43 in hexadecimal number system is _____

(A) B2
(B) 2B
(C) C2
(D) 2C

149. A Decade counter skips the sequence

(A) Binary states 1000 to 1001
(B) Binary states 0000 to 0011
(C) Binary states 1010 to 1111
(D) Binary states 0111 to 1000

150. Outputs are high when the inputs are dissimilar. The resulting circuit is _____

(A) OR gate
(B) AND gate
(C) NOT gate
(D) EX-OR gate

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151. A device which converts BCD to seven segment display is called _____

(A) Encoder (B) Decoder

(C) Multiplexer (D) De multiplexer

152. In the toggle mode a J-K flip-flop has _____

(A) J = 0, K = 0 (B) J = 1, K = 1

(C) J = 0, K = 1 (D) J = 1, K = 0

153. Which logic family provides minimum power dissipation?

(A) TTL (B) RTL

(C) ECL (D) CMOS

154. The components which play a significant role in the formation of dynamic RAM are _____

(A) Two MOSFETs (B) Two Capacitors

(C) One MOSFET and one capacitor (D) One MOSFET and two capacitors.

155. The waves used for line of sight communication is _____

(A) Sound waves (B) Ground waves

(C) Sky waves (D) Space waves

156. The Multiplexing technique used to transmit digital signals is

(A) FDM (B) CDM

(C) TDM (D) PCM

157. The core of a fiber optic cable is made up of

(A) Air (B) Glass

(C) Diamond (D) Quartz

158. In frequency modulation

(A) Frequency of the carrier remains unchanged

(B) Carrier frequency changes in accordance with the modulating signal frequency

(C) Carrier frequency changes in accordance with the modulating signal Amplitude

(D) Amplitude of the carrier changes.

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159. The cavities in a Klystron produce _____ modulation of the electron beam

(A) Velocity (B) Frequency

(C) Amplitude (D) Pressure

160. Geostationary Satellites are located at a height of

(A) 37888 Kms from earth's surface (B) 39888 Kms from earth's surface

(C) 33888 Kms from earth's surface (D) 35888 Kms from earth's surface

161. The three terminals of MOSFET are

(A) Anode, Cathode, Gate (B) Emitter, colletor, Gate

(C) Drain, Source, Base (D) Drain, Source, Gate

162. IGBT is a combination of

(A) SCR and BJT (B) MOSFET and SCR

(C) MOSFET and BJT (D) DIAC and BJT

163. The Average output voltage (V_o) of stepdown chopper is

(A) $\left(\frac{T_{ON}}{T_{OFF}}\right) \times V_s$ (B) $\left(\frac{T_{ON}}{T_{ON}+T_{OFF}}\right) \times V_s$

(C) $\left(\frac{T_{OFF}}{T_{ON}+T_{OFF}}\right) \times V_s$ (D) $\left(\frac{T_{OFF}}{T_{ON}}\right) \times V_s$

164. The firing angle control range of UJT firing circuit is

(A) Only 0-90° (B) Only 0-45°

(C) Only 0-180° (D) Only 0-150°

165. In ONLINE UPS inverter is

(A) Always OFF (B) Always ON

(C) ON only during failure of supply (D) OFF only during failure of supply

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166. Bipolar Semiconductor device means

(A) Device having two Junctions

(B) Device in which current conduction is due to either holes or electrons

(C) Device in which current conduction is due to both holes and electrons

(D) Device in which current conduction is due to electrons only.

167. Which of the following statements is true?

(A) TRIAC and SCR are bidirectional device

(B) TRIAC and SCR are Unidirectional device

(C) TRIAC requires less gate current to turn-ON than SCR.

(D) TRIAC requires more gate current to turn-ON than SCR.

168. For forward motoring, which of the following statements is true?

(A) Speed is positive, Torque is positive

(B) Speed is negative, Torque is positive

(C) Speed is positive, Torque is negative

(D) Speed is negative, Torque is negative

169. Longer coasting period for a train results in _____

(A) Higher Schedule speed

(B) Lower Specific Energy Consumption

(C) Higher Retardation

(D) Higher Acceleration

170. The choice of an Electric Drive when the power to be supplied is very large is

(A) 3ϕ slip Ring Induction Motor

(B) 3ϕ squirrel cage Induction motor

(C) 3ϕ synchronous motor

(D) 1ϕ Induction motor

171. In Electric traction, brakes are applied to bring the train to rest during

(A) Acceleration

(B) Free Run

(C) Coasting

(D) Retardation

172. In Underground traction, the supply system is

(A) 25 KV, 50 Hz

(B) 25 KV, 25 Hz

(C) 50 KV, 50 Hz

(D) 500 V to 1000 V DC

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173. The application that needs frequent starting and stopping is _____

(A) Blowers (B) Grinding Mills

(C) Lifts (D) Paper Mills

174. A typical Active Load is _____

(A) Lathe (B) Hoist

(C) Pump (D) Blower

175. Earth Resistance can be decreased by

(A) Increasing soil Resistivity (B) Increasing soil Conductivity

(C) Increasing soil Permittivity (D) Increasing soil permeability.

176. In transmission lines, for zero to 2 degree deviation, the type of tower preferred is

(A) D type tower (B) C type tower

(C) B type tower (D) A type tower

177. Underground service mains is preferred for _____ distance

(A) More than 5m (B) Less than 5m

(C) More than 25m (D) Less than 25m

178. Delta Connected Induction Motor will have low efficiency for _____ loading conditions

(A) No-Load (B) More than 50%

(C) Less than 50% (D) Full load

179. In Energy Management system, DSM means

(A) Distribution system management (B) Demand-system management

(C) Distribution side management (D) Demand-side management

180. Industrial drive transmission efficiency can be improved by replacing V-Belts with

(A) Flat Belts (B) Round Belts

(C) Multiple Belts (D) Chain Belts

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